

REMARKS

Initially, Applicant would like to thank the Examiner for indicating acceptance of the Drawings in the present application. In addition, Applicants wish to thank the Examiner for acknowledging consideration of each of the documents cited on Form PTO-1449 submitted with the Information Disclosure Statement filed on May 24, 2007.

In the outstanding Official Action, claims 4, 5, 15 and 16 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 1-9 and 12-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over SHIOTA et al. (U.S. Patent No. 6,535,331) in view of DiGIOVANNI et al. (U.S. Patent No. 5,115,338).

Upon entry of the present amendment, claims 1, 2, 4-7, 12, 13, 15-18, 21 and 22 will have been amended, claims 3 and 14 will have been cancelled, and new claims 23 and 24 will have been added. In particular, independent claims 1, 12 and 22 will have been amended to recite, *inter alia*, that the outgoing side of said second back-end amplifier optical fiber amplifier and said back-end pumping light introducing section are connected to each other (utilizing the terminology of claim 1 as a non-limiting example).

Claims 2, 4-7, 13, 15-18 and 21 will have been amended to address noted informalities. In particular, claims 4, 5, 15 and 16 will have been amended to address the Examiner's concerns. New claims 23 and 24 recite features similar to features recited in claims 17 and 18.

The amendments to claims 1, 2, 4-7, 12, 13, 15-18, 21 and 22, the cancellation of claims 3 and 14, and the addition of new claims 23 and 24 should not be considered an indication of Applicant's acquiescence as to the propriety of any of the outstanding rejections. Rather, Applicant has amended claims 1, 2, 4-7, 12, 13, 15-18, 21 and 22, cancelled claims 3 and 14, and

added new claims 23 and 24 to advance prosecution and to obtain early allowance of the claims in the present application. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. §112 rejection of claims 4, 5, 15 and 16.

Applicant traverses the rejection of claims 1-9 and 12-20 under 35 U.S.C. §103(a) over SHIOTA and DiGIOVANNI. In this regard, SHIOTA is directed to a wideband optical amplifier for amplifying an input optical signal of a known wavelength in one of at least two bands of wavelength. However, as acknowledged by the Examiner, SHIOTA does not teach or suggest second stage fibers including a first back-end optical amplifier and a second back-end optical amplifier. The Examiner relies upon DiGIOVANNI to teach an optical fiber amplifier with two gain stages, and interprets fiber 18 as being a front end optical amplifier and fiber 19 as being a backend optical amplifier. The Examiner asserts that replacing the single stage fiber amplifiers 21 and 22 of SHIOTA with the fibers 18 and 19 shown in Figure 1 of DiGIOVANNI would result in the claimed invention.

Even assuming, *arguendo*, that single stage fiber amplifiers 21 and 22 of SHIOTA were replaceable with fibers 18 and 19 of DiGIOVANNI in the manner suggested by the Examiner, one would still not arrive at the combination of features recited in claim 1. That is, pump light source 31 and WDM coupler 31c of SHIOTA would be introducing light to a back-end fiber (*e.g.*, fiber 19 of DiGIOVANNI) and not to a front-end fiber (*e.g.*, fiber 18 of DiGIOVANNI). In contrast, as can be seen in Figure 1 of the present application and as recited in claim 1, a first front-end pumping light source 14 and a WDM coupler 16 introduce light to a first front-end optical fiber amplifier 12 and not, a first back-end optical fiber amplifier 18. As shown in Figure 1 of the present application, a first front-end optical fiber amplifier 12 is separated from first back-end optical fiber amplifier 18 by the first front-end pumping light source 14 and the WDM

coupler 16 as well as an optical isolator 44. Replacing single stage fiber amplifiers 21 and 22 taught by SHIOTA with fibers 18 and 19 taught by DiGIOVANNI in the manner suggested by the Examiner would thus not result in either a) a pump light 31 and a WDM coupler 31c or b) a pump light 32 and a WDM coupler 32c, as taught by SHIOTA, being situated in between two optical fibers.

Further, the Examiner asserts that placing the optical switch between the fiber 19 and associated backward pump 32 in DiGIOVANNI would result in a connection of the outgoing side of the first backend optical amplifier with the backend pumping light introducing section in one of the switching positions. However, the modification suggested by the Examiner does not teach or suggest that an optical connecting section connects the outgoing side of said first back-end optical fiber amplifier and the incident side of said second front-end optical fiber amplifier to each other, as recited in claim 1. Further, claim 1 has been amended to recite, *inter alia*, that the outgoing side of said second back-end optical fiber amplifier and said back-end pumping light introducing section are connected to each other by the optical connecting section. Even if DiGIOVANNI was modified to include the optical switch 50 and L-band optical amplifier 320 taught by SHIOTA, neither of the above-discussed two features would be disclosed.

An objective of SHIOTA includes providing a wideband optical amplifier for amplifying an input optical signal using a significantly small number of optical components, a simple structure and low cost (see column 3, lines 19-37 of SHIOTA). Modifying SHIOTA with DiGIOVANNI would destroy the teachings of SHIOTA insofar as a greater number of optical components would be introduced. Further, DiGIOVANNI does not teach or suggest two different wavelength ranges of light, let alone an C-band wavelength of light or an L-band wavelength of light. Accordingly, modifying DiGIOVANNI to include an optical switch would

render the optical switch superfluous insofar as there is no need in DiGIOVANNI to perform optical switching as no wavelength distinction between inputs is disclosed or even suggested.

Modifying SHIOTA with DiGIOVANNI in the manner suggested by the Examiner requires impermissible hindsight. Applicant thus submits that the Examiner is attempting to employ impermissible hindsight to assert that it would have been obvious to a) replace the single stage fiber amplifiers 21 and 22 of SHIOTA with the fibers 18 and 19 shown in Figure 1 of DiGIOVANNI and b) to add an optical switch between the fiber 19 and associated backward pump 32 in DiGIOVANNI insofar as SHIOTA fails to teach or even suggest the desirability of doing what the Examiner suggests.

Any amendments to the claims in this Amendment, which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

In view of the herein contained amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the previously asserted objections and rejections set forth in the Office Action of February 26, 2008 together with an indication of the allowability of the claims in the present application. Such action is respectfully requested and is believed to be appropriate and proper.

If any extension of time is deemed to be necessary to maintain the pendency of the application, including any extension of time fees for entry of an Examiner's Amendment, the Patent and Trademark Office is hereby requested and authorization is hereby provided to charge any necessary fees to maintain the pendency of this application to Deposit Account No. 19-0089.

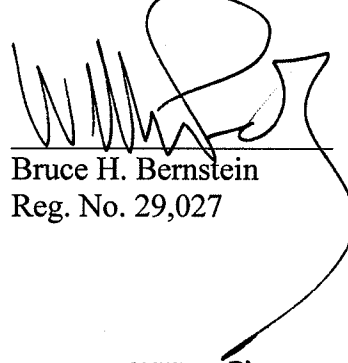
Should the Examiner have any questions concerning this Response or the current application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

May 27, 2008
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Respectfully Submitted,
Atsushi SEKI

A handwritten signature in black ink, appearing to read 'Bruce H. Bernstein', written over a horizontal line.

Bruce H. Bernstein
Reg. No. 29,027

A long, sweeping handwritten signature in black ink, starting from the right side of the page and extending towards the left, ending with a large loop.

William Pieprz
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